

REMARKS/ARGUMENTS

In the Office Action, claims 1-7, and 9-12 were allowed, claims 8, 13-32 and 34 were rejected, and claim 33 was objected to. Applicants thank the Examiner for allowing claims 1-7, and 9-12, and indicating the allowability of claim 33 if rewritten. The limitations of objected original claim 33 have been incorporated into independent claim 27. By this Reply and Amendment, independent claims 13, 18, and 27 have been amended, claims 23 and 33 canceled without prejudice or disclaimer to the subject matter contained therein, and claims 1-22, 24-32, and 34 remain pending in the present application.

Claims 8, 18-26, and 31 were rejected under 35 U.S.C. §112 first paragraph, as failing to comply with the enablement requirement. Specifically, the Office Action recited that the limitations of “multi-segment well model” or “grid” scheme/size are not adequately supported in the instant specification. This rejection is respectfully traversed.

Regarding the “multi-segment well model”, this term is defined in the last paragraph of page 8 of the provisional application, incorporated into the instant application by reference in its entirety. As stated therein:

“The well is horizontally completed at the center of the reservoir in the X direction and is modeled as a number of segments with the ID of 0.45 ft. The pressure drop in each segment is calculated using homogeneous flow model. The heat transfer coefficient between wellbore segment and the reservoir is calculated based on the formation thermal conductivity between the wellbore and the wellblock. In doing so, we assumed that the fluid inside the well segment have the same temperature as calculated at the sandface.”

As stated in [0050], “The wellbore model in this embodiment further utilizes a wellbore flow rate distribution equation and a temperature distribution equation described below.” An example of a single segment for the wellbore flow rate distribution model is shown between paragraphs [0053] and [0054]. Paragraphs [0050] through [0059] detail a derivation of an embodiment of the multi-segment wellbore model resulting in equation (1.5). Paragraphs [0060] through [0066] for water injection and paragraphs [0067] through [0068] for oil injection result in multi-segment well models (1.12) for water injection and (1.17) for oil injection.

The term “grid” and an example of the selection of an appropriate grid size are detailed in the paragraph following the heading “Temperature Behavior” on page 9 of the provisional application and continue on through at least Fig. 10 on page 14. As stated on page 8, the reservoir fluid is simulated using a “compositional ECLIPSE-300” standard reservoir modeling system. The grid size is fed into the modeling system to produce the temperature at the wellbore. An example of a refined grid size is shown in Table 3 on page 11 of the provisional application and the changes produced by refining the grid size are shown in FIGS. 6 and 7 on page 12 of the provisional application. As stated in paragraph [0082] of the instant application, “By refining the grid size around the wellbore 30 the temperature profile can be stabilized. In other words, the model can utilize a grid system having a grid size selected such that further refinement of the individual grid sizes does not affect the temperature.”

Applicants feel that since the provisional application has been incorporated in its entirety into the current application, the instant Specification adequately supports the limitation of “multi-segment well model” and “grid”. Referring to at least the previously discussed citations, a person of average skill in the art should be enabled to make or use the claimed system or method. Accordingly, Applicants respectfully request that the 112 first paragraph rejection of claims 8, 18-26, and 31 be reconsidered and withdrawn.

Claims 27-29 and 32 were rejected under 35 U.S.C. §102(a) as being anticipated by the Williams et al. reference, U.S. Patent Application Publication No.: 2004/0112596 A1. This rejection is respectfully traversed; however independent claim 27 has been amended to clarify aspects of the claim language.

The Williams et al. reference fails to anticipate each and every element of amended independent claim 27. For example, the reference does not anticipate a system in which “the processor system is also able to receive and process reservoir thermal conductivity data in deriving the flow profile” as recited in independent claim 27. For at least this reason, Applicants respectfully request reconsideration and withdraw of this rejection.

Claims 28-29 and 32 depend from and add limitations to independent claim 27. Accordingly, these dependent claims should also be in allowable form for at least the previously stated reasons.

Claims 13-18 and 27-30, 32, and 34 were rejected under 35 U.S.C. §102(a) as being anticipated by SPE 84379 to Brown et al. This rejection is respectfully traversed; however independent claims 13, 18, and 27 have been amended to clarify aspects of the claim language.

The Brown et al. reference fails to anticipate each and every element of amended independent claims 13, 18, and 27. For example, the reference does not anticipate a method in which a flow profile is determined based on "reservoir thermal conductivity data" as recited in independent claim 13; or a method of determining a flow profile in a deviated well "wherein applying a multi-segment well model further comprises incorporating a thermal conductivity of the reservoir into the multi-segment well model" as recited in independent claim 18; or a system "wherein the processor system is also able to receive and process reservoir thermal conductivity data in deriving the flow profile" as recited in independent claim 27. For at least these reasons, Applicants respectfully request reconsideration and withdraw of these rejections.

Claims 12-17, 28-30, 32, and 34 depend from and add limitations to independent claims 13 and 27. Accordingly, these dependent claims should also be in allowable form for at least the previously stated reasons.

The Commissioner is authorized to charge the §1.17(a)(1) fee for a two month extension in the amount of \$130.00 to Deposit Account No.: 50-0457 (103.0010). It is believed that this is the only fee due at this time; however, the Commissioner is authorized to charge any deficiency (except for issue fees) or credit any over payment to the above referenced Deposit Account number.

In view of the foregoing remarks, the pending claims should be in condition for allowance. However, if the Examiner believes certain amendments are necessary to clarify the present claims or if the Examiner wishes to resolve other issues by way of a telephone conference, the Examiner is kindly invited to contact the undersigned attorney at the telephone number indicated below.

Respectfully submitted,

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